



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/703,140	10/31/2000	David Hoyle	TI-30554	1023
23494	7590	03/11/2005	EXAMINER	
TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			MAI, TAN V	
			ART UNIT	PAPER NUMBER
			2124	

DATE MAILED: 03/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/703,140

Applicant(s)

HOYLE, DAVID

Examiner

Tan V Mai

Art Unit

2124

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/0/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-11 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-11 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

AB

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-6 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoffman in view of either Balkanski et al (record reference) or Saishi et al. (record reference).

As per independent claim 1, Hoffman discloses, e.g., see Fig. 1, the invention substantially as claimed, including: multipliers (110,120) & elements (130, 140) for shifting the results of multipliers (110, 120) and add element (150) which are capable of performing the claimed "forming" and "combining" steps, respectively. Also, see col. 2, lines 9-11 for the shifting feature. It is noted that Hoffman does NOT specifically disclose: (1) "fetching a first pair of elements", (2) "rounding" and (3) "shifting" steps. Firstly, the claim only uses the "first element of the first pair of elements". Therefore, the "value B" is considered the claimed feature. Secondly, the "rounding" and "shifting" steps are old and well known in the art to round and truncate a "result" to a desired length. For example, (1) Balkanski et al (e.g., see Fig.1 element 18; col. 9, lines 11-27) and (2) Saishi et al (e.g., see Figs. 1-2 & 8-9, and col. 2, lines 5-41; col. 5, line 51 to col. 6, line 53; col. 8, line 12 to col. 9, line 60) discloses multiplication devices having "rounding feature (i.e., add a rounding value) and "shifting" feature (i.e., shift or discard a number of bit(s)). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine either Balkanski et al or Saishi et al's "rounding" and "shifting" features in Hoffman, thereby making the claimed invention,

because the proposed device a multiplication device having a dual path for most significant product & least significant product and "rounding" & "shifting" features as claimed.

As per claims 2-3, Balkanski et al (e.g., see col. 9, lines 25-26) and Saishi et al (e.g., see col. 2, lines 5-24) do show the claimed feature.

As per claim 4, Balkanski et al (e.g., see col. 9, lines 23-27, "a 1 is added at position **bit 14** in order to round up the number represented by bits 31 through 15. The six most significant bits and the **fifteen least significant bits** of this 32-bit multiplication result are then discarded". It implies "rounding value" 2^{**14} and shift amount of 15) and Saishi et al (e.g., see Figs. 8 & 9 and col. 2, lines 5-24) do show the claimed feature.

As per claim 5, Balkanski et al do show the claimed feature "fix value of fourteen". Saishi et al (e.g., see col. 2, lines 5-24) do show shifting a number of bits.

As per claim 6, Hoffman's "value B" is considered the claimed feature.

Due to the similarity of apparatus claim 9 to method claim 1, it is rejected under a similar rationale.

As per claim 10, Balkanski et al (e.g., see col. 9, lines 23-25, "a 1 is added at position **bit 14** in order to round up the number represented by bits 31 through 15". It implies "rounding value" 2^{**14}) and Saishi et al (e.g., see Figs. 8 & 9 and col. 2, lines 5-24) do show the claimed feature.

As per claim 11, the claim adds "cellular telephone" feature. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine either Balkanski et al or Saishi et al's "rounding" and "shifting" features in Hoffman and use in "cellular telephone" as claimed because the proposed device can be implemented in IC and use in "cellular telephone".

3. Claims 1-6 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chevillat et al (IBM tech. Discl. Bull.) in view of either Balkanski et al (record reference) or Saishi et al. (record reference).

As per independent claim 1, Chevillat et al disclose, e.g., see Fig. and page 2, beginning the third complete paragraph, the invention substantially as claimed, including: 12-bit multiplier for 12X16 bit multiplication which is capable of performing the claimed "forming" and "combining" steps, respectively. Also, see col. 2, lines 9-11 for the shifting feature. It is noted that Chevillat et al do NOT specifically disclose: (1) "fetching a first pair of elements", (2) "rounding" and (3) "shifting" steps. Firstly, the claim only uses the "first element of the first pair of elements". Therefore, the input through the A Register is considered the claimed feature. Secondly, the "rounding" and "shifting" steps are old and well known in the art to round and truncate a "result" to a desired length. For example, (1) Balkanski et al (e.g., see Fig.1 element 18; col. 9, lines 11-27) and (2) Saishi et al (e.g., see Figs. 1-2 & 8-9, and col. 2, lines 5-41: col. 5, line 51 to col. 6, line 53; col. 8, line 12 to col. 9, line 60) discloses multiplication devices having "rounding feature (i.e., add a rounding value) and "shifting" feature (i.e., shift or discard a number of bit(s)). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine either Balkanski et al or Saishi et al's "rounding" and "shifting" features in Chevillat et al, thereby making the claimed invention, because the proposed device a multiplication device having a dual path for most significant product & least significant product and "rounding" & "shifting" features as claimed.

As per claims 2-3, Balkanski et al (e.g., see col. 9, lines 25-26) and Saishi et al (e.g., see col. 2, lines 5-24) do show the claimed feature.

As per claim 4, Balkanski et al (e.g., see col. 9, lines 23-27, "a 1 is added at position **bit 14** in order to round up the number represented by bits 31 through 15. The six most significant bits and the **fifteen least significant bits** of this 32-bit multiplication result are then discarded". It implies "rounding value" 2^{**14} and shift amount of 15) and Saishi et al (e.g., see Figs. 8 & 9 and col. 2, lines 5-24) do show the claimed feature.

As per claim 5, Balkanski et al do show the claimed feature "fix value of fourteen". Saishi et al (e.g., see col. 2, lines 5-24) do show shifting a number of bits.

As per claim 6, the input through the A Register is considered the claimed feature.

As per apparatus claim 9, the claim recites a plurality of multipliers. Chevillat et al use a single multiplier for serial performing the multiplication. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use a plurality of multipliers for parallel multiplication in Chevillat et al, thereby making the claimed invention, because the proposed device a multiplication device having a dual path for most significant product & least significant product and "rounding" & "shifting" features as claimed.

As per claim 10, Balkanski et al (e.g., see col. 9, lines 23-25, "a 1 is added at position **bit 14** in order to round up the number represented by bits 31 through 15". It implies "rounding value" 2^{**14}) and Saishi et al (e.g., see Figs. 8 & 9 and col. 2, lines 5-24) do show the claimed feature.

As per claim 11, the claim adds "cellular telephone" feature. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to

combine either Balkanski et al or Saishi et al's "rounding" and "shifting" features in Chevillat et al and use in "cellular telephone" as claimed because the proposed device can be implemented in IC and use in "cellular telephone".

4. Due to the new grounds of rejection cited above, that the office action is NON-FINAL.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tan V. Mai whose telephone number is (571) 272-3726. The examiner can normally be reached on Mon-Wed and Fri. from 9:30am to 2:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki, can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is:

Official (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



**TAN V. MAI
PRIMARY EXAMINER**